



# Digestive System

What is  
Digestion?

The break down of  
food into molecules  
that are small enough  
to be absorbed and  
used by the body

**What is  
Digestion?**

*This involves:*

*Ingestion and propulsion of  
food along digestive tract*

*Break down of food*

*Absorption of nutrients*

*Elimination of waste (fecal  
matter)*

## What Belongs to the Digestive System?

The digestive system can be broken down into two main parts:

The digestive tract

The path that food travels along

The digestive glands

These produce the chemical secretions necessary to digest (break down) the food

## Mechanical vs Chemical

# Mechanical transformation:

Physically breaking down  
food into smaller bits  
without changing its  
chemical nature

## Mechanical vs Chemical

### Chemical transformation:

Complex molecules are broken down into simpler molecules that can be absorbed by the body; chemical nature is changed

## The Digestive Tract

The digestive tract is made up of:

The mouth

The pharynx

The esophagus

The stomach

The small intestine (ileum)

The large intestine (colon)

Salivary Glands

Tongue

Epiglottis

Esophagus

Liver

Stomach

Gallbladder

Pancreas

Duodenum

Small intestine

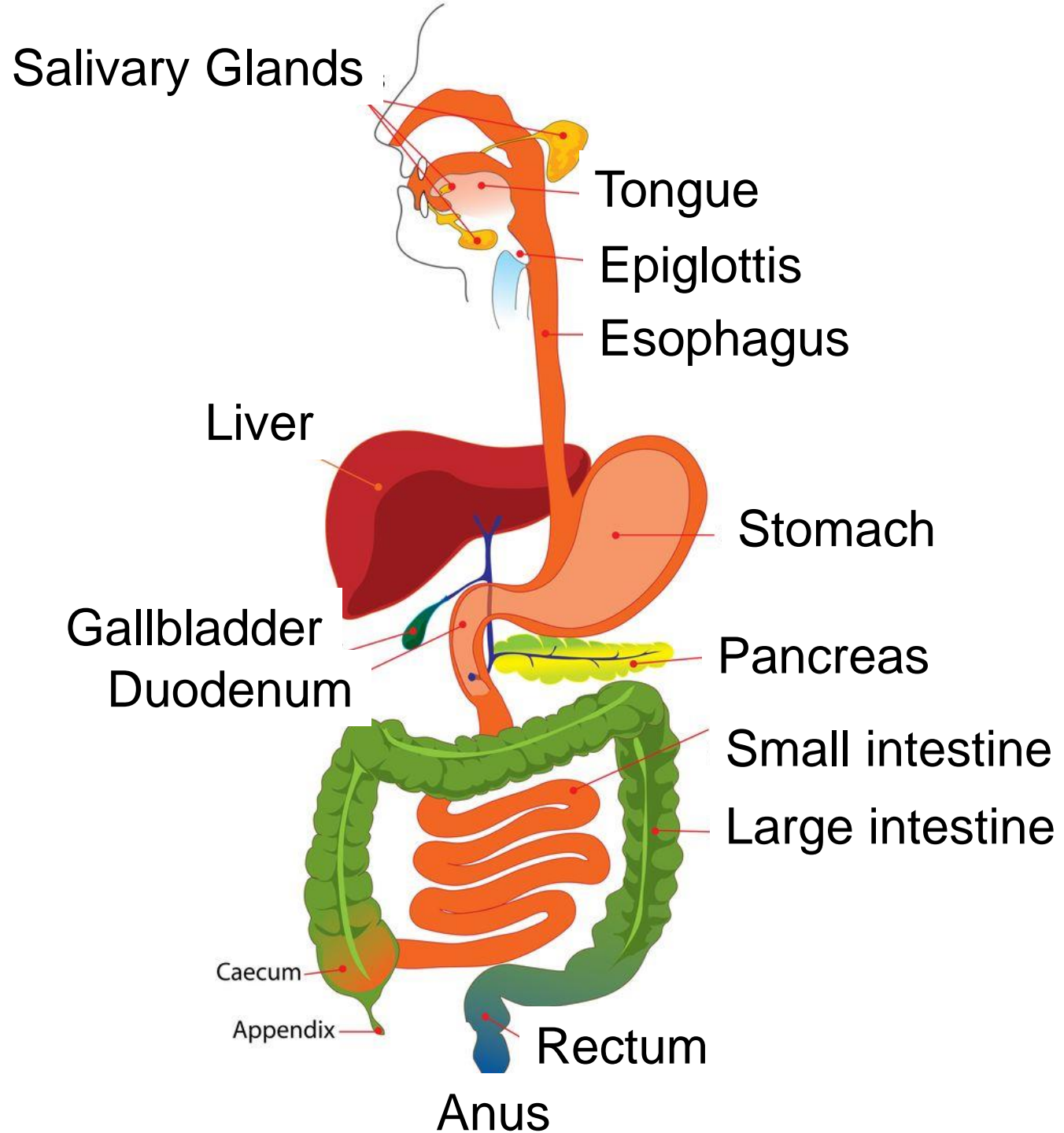
Large intestine

Caecum

Appendix

Rectum

Anus





## The Digestive Glands

The digestive glands:

The salivary glands

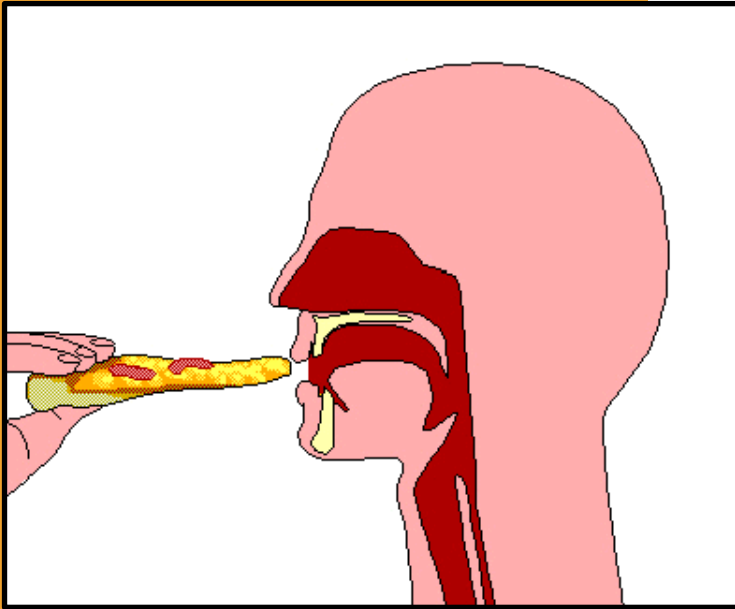
The gastric glands

The liver

The pancreas

The intestinal glands

## Functions of the Digestive Tract



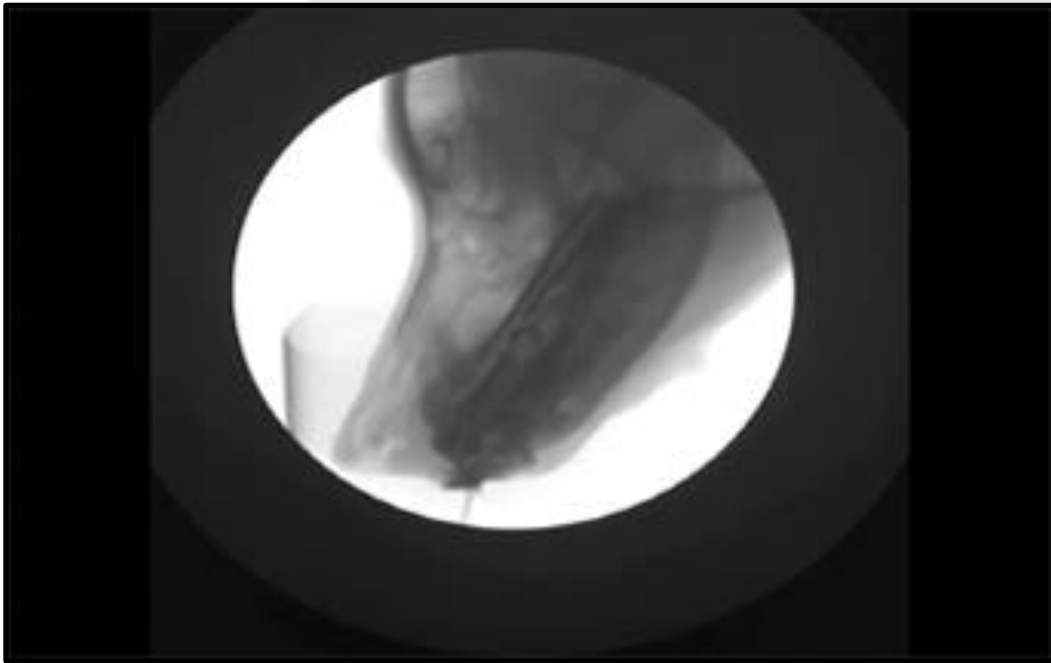
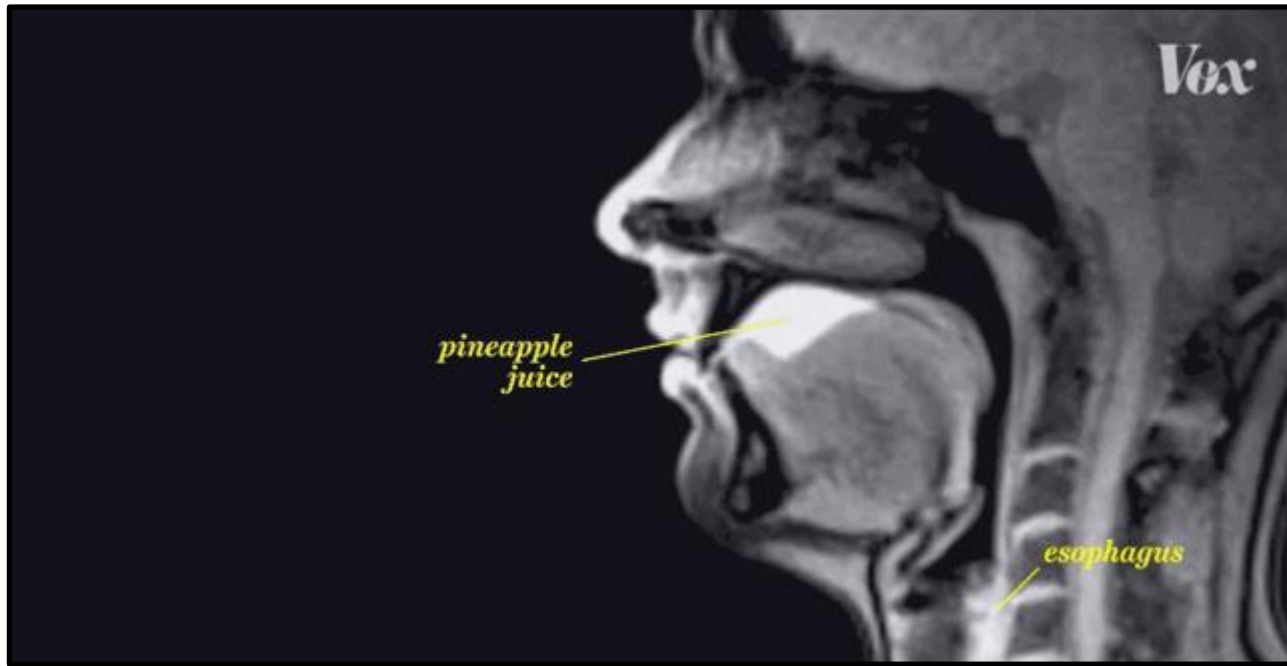
# Mouth:

Ingestion of food

This is where food enters the digestive tract

Mechanical breakdown of food through mastication (chewing)

Chemical breakdown of starches thanks to amylase in saliva



## Swallowing

During swallowing:

Uvula moves up to block the nasal cavity

So no food goes up your nose

Epiglottis covers the trachea (airway)

So no food goes into your lungs

## Functions of the Digestive Tract

# Pharynx:

The next step in the  
digestive tract

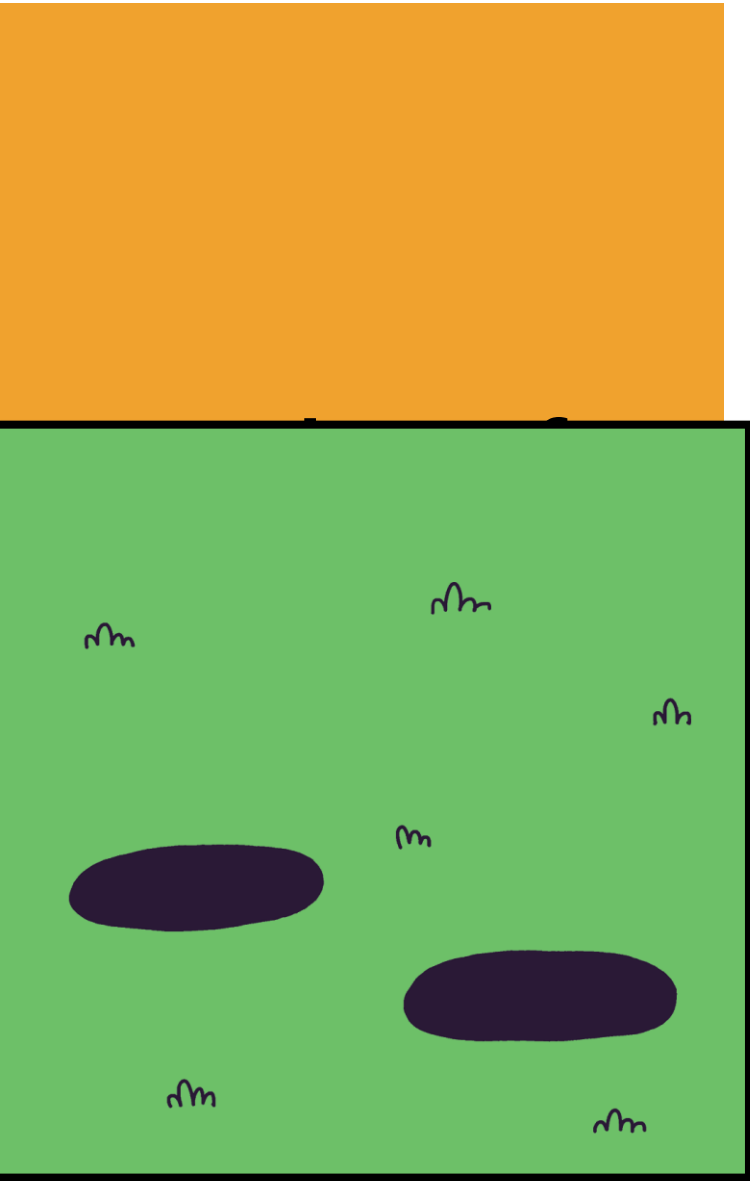
Moves food from  
mouth to esophagus



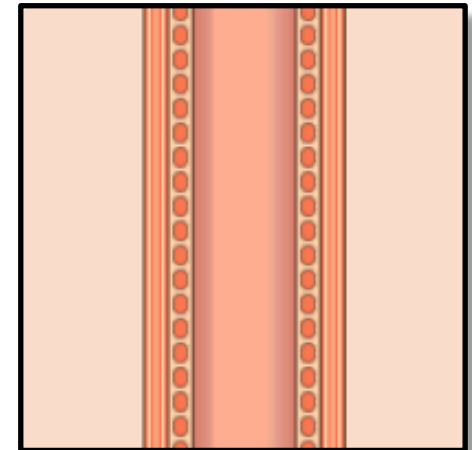
# Esophagus:

Propels food towards  
the stomach

Uses peristalsis; a type  
of muscular contraction  
to move the food down  
the esophagus



Never Google "worm GIFs"





## Functions of the Digestive Tract

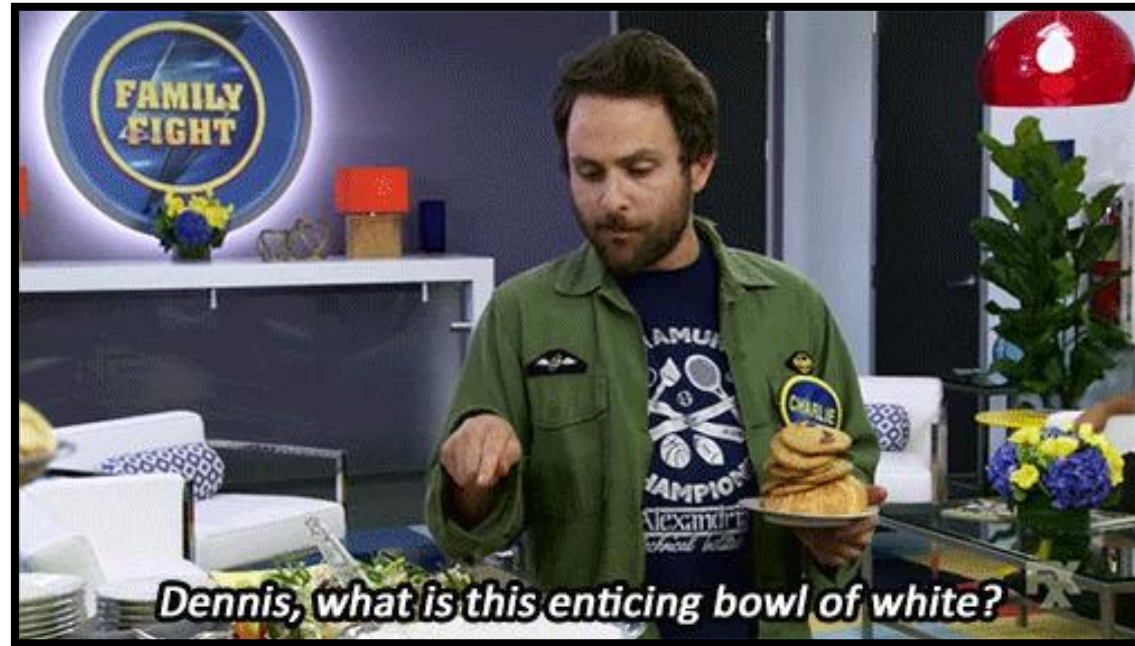
### Stomach:

J-shaped sac where food is mixed with secretions from digestive glands to form chyme

Secretion of gastric juices (hydrochloric acid and pepsin) to break down proteins

*We refer to the partially digested food as chyme*

## Functions of the Digestive Tract



It has the consistency of cottage cheese... yum!



## Functions of the Digestive Tract

### Small intestine:

More chemical breakdown of food:

Release of intestinal and pancreatic juices to break down proteins, carbohydrates and fats

## Functions of the Digestive Tract

### Small intestine:

Proteins → amino acids

Carbohydrates → simple sugars (glucose mostly)

Fats → glycerol and fatty acids

Also has bile from the liver to help breakdown fats (mechanical)

## Functions of the Digestive Tract

### Small intestine:

#### Absorption

The passage of nutrients from the digestive tract into the blood stream (or lymph)

Most absorption occurs in the small intestine

Covered in many small folds called villi that increase the surface area for absorption

## Functions of the Digestive Tract

### Large intestine:

Absorption of water,  
vitamins and minerals

Only waste products  
left afterwards

Feces is expelled from  
the rectum through  
the anus



# Digestive Glands

## Functions of the Digestive Glands



# Salivary Glands:

Secrete saliva

Lubricates the mashed food

Makes it easier to pass along  
the pharynx and esophagus

Starts the chemical  
breakdown of starches

Thanks to an enzyme called  
amylase

## Functions of the Digestive Glands

### Gastric Glands:

Found on the inside lining  
of the stomach

Secrete the gastric juices

These contain hydrochloric  
acid and pepsin

Starts the chemical digestion  
of proteins

## Functions of the Digestive Glands

### Intestinal Glands:

Found on the inside lining of the small intestine

### Secrete the intestinal juices

Start the chemical digestion of fats

Also helps in chemical breakdown of proteins and carbohydrates

And helps neutralize the acid of the stomach



## Functions of the Digestive Glands

### Pancreas:

Secretes the pancreatic  
juices

Helps in chemical breakdown  
of fats, proteins and  
carbohydrates

Also secretes insulin

The hormone responsible  
for regulating blood sugar!

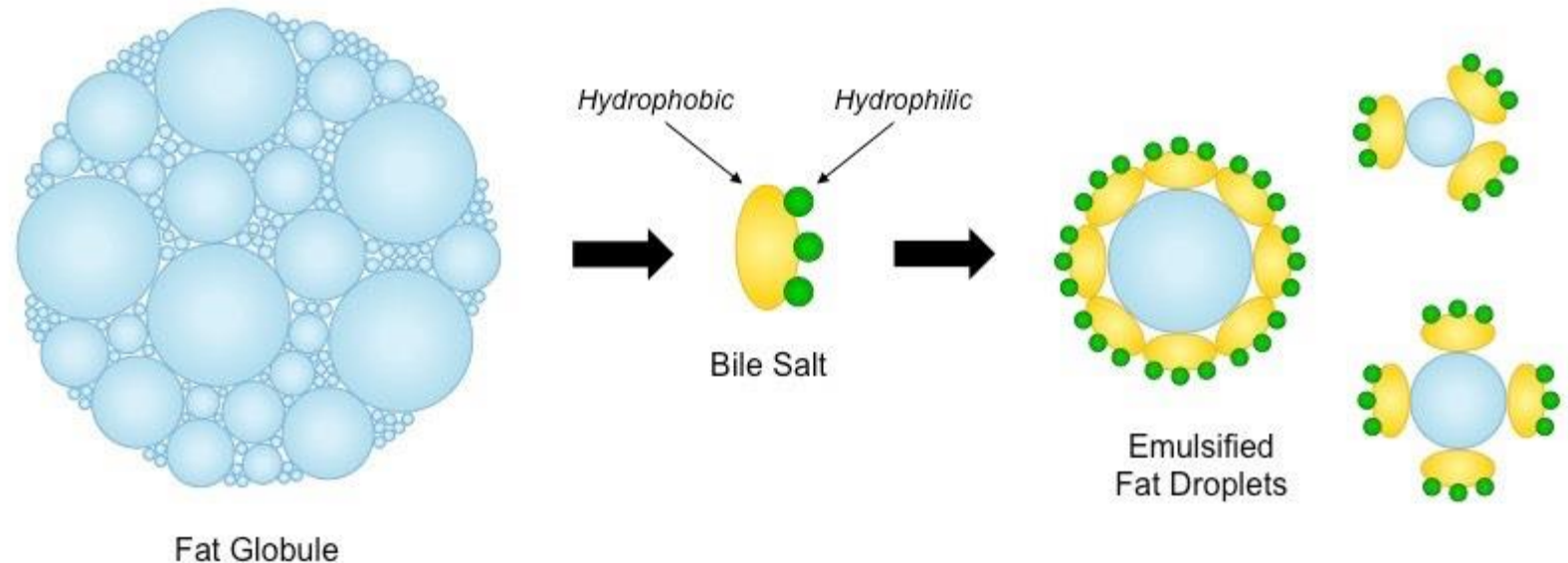
## Functions of the Digestive Glands

# Liver:

Produces bile

Helps in mechanical breakdown of fats

Emulsifies the fat (breaks it up into smaller molecules)



## Digestion and Absorption of Nutrients

The whole point of digestion is to extract the required nutrients from the food we eat

In doing so, the digestive process is breaking each macronutrient into its components

Carbs → simple sugars

Proteins → amino acids

Fats → glycerol and fatty acids